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AUTHOR	Leh, Amy S. C.; Myers, Paul; Fisher, Chris
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ABSTRACT

This paper reports on two case studies conducted at three schools in California. The first case study investigated computer literacy levels of 35 teachers at one elementary school and one middle school. Both schools have fast access to the Internet, and each classroom has at least one computer hooked up to the Internet. Findings indicate that teachers do not fully use software available to them and that they need technology training, especially small group or one-on-one training. The second case study examined the levels of 20 5th grade students at an elementary school. Results indicate that students do not have sufficient computer skills, and more training needs to be provided. The case studies reveal that computer skills of both teachers and students need to be enhanced. (Author/MES)

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Levels of Computer Literacy of School Teachers and Students: Case Studies

Amy S. C. Leh, Ph.D.
Instructional Technology
California State University San Bernardino
United States
aleh@csusb.edu

Paul Myers
Cucamonga Middle School
United States
webfoot5@earthlink.net

Chris Fisher
Redwood Elementary, Fontana Unified School District
United States
Clncyfn51@aol.com

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Abstract: The paper reports two case studies conducted at three schools in California. The first case study investigated computer literacy levels of thirty-five teachers at two schools. Findings indicate that teachers do not fully use software available to them and what they need technology training, especially small group or one-on-one training. The second case study examined the levels of twenty 5th grade students at a school. Results indicate that students do not have sufficient computer skills and more training needs to be provided. The case studies reveal that computer skills of both teachers and students need to be enhanced.

Introduction

Technology has become an ever-increasing factor in today's classrooms, and computer usage in the classroom is on the rise. Along the trend, we have been seeing President Clinton and Vice president Gore promoting technology use in education, business sectors donating money to institutions, schools receiving federal or state grants for upgrading technology on sites, and decision makers investing a tremendous amount of money into computer technology. While all of these are happening simultaneously, training our teachers and students to be technology literate to improve the quality of education is the ultimate goal.

The literature indicates a close relationship between the training a user has on technology and his/her comfort level of using the technology. Chiero (1997), in her study of teacher computer users, noted that the more training the teachers received, the more likely they were to be comfortable users of the technology. Walters and Necessary (1996) studied business school students and found strong correlation between the number of computer classes a student had taken and the positive attitudes those students had about computer usage in general. These studies indicated that if users have more

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training, they feel more comfortable of using technology. Do our teachers have adequate computer experience and training to be comfortable users of computers in classrooms?

Mowrer-Popiel, Pollard, and Pollard (1994) found that many preservice teachers did not have much computer experience upon entering the classroom and concluded that districts should invest heavily in teacher technology inservice training. The preferred method of learning new technologies in their study was in the following order: a tutor, a class, own experimenting, and instruction manuals. Marcinkiewicz (1994 & 1995) found that preservice teachers had much more experience with computers than did their inservice teaching counterparts. This indicated that although schools are investing in computer technology, either not enough is invested into training or that the training is not being utilized to its fullest.

The following two case studies examined levels of computer literacy of school teachers and students. Research methods and results are reported. Suggestions are provided to educators.

The Case Studies

Computer Literacy of School Teachers

The study is intended to discover whether teachers at two schools, that are well equipped with modern computers, are as computer literate as one would expect. The focus was on one elementary school and one middle school in a school district in Southern California. Both schools have fast access to the Internet, and each classroom has at least one computer hooked up to the Internet. Teachers have received extensive training in a variety of software applications, and each school has had a technology mentor residing at the school for the past two and one half years. Has the training that the teachers have received over the past couple of years benefited them? The goal of this study was to examine the current use of computers among teachers at these two technologically advanced schools.

The instrument used for this study was a survey. Thirty-five teachers at the two schools responded to the survey on their use of technology. The survey asked specifically about the teachers' use of computers, related software, and the Internet. Surveys were to remain anonymous to aid in the truthfulness of respondents. The survey was meant to discover teacher knowledge of their own computers, to ascertain the software usage and frequency of use, and to discover what type of training they would like to see in the future.

Results indicated that teachers had several programs available to them. The two schools belong to the San Bernardino County Open Mail (Omail) system. Both schools rely heavily on email for communication, and it is understandable that this percentage of use is high. Of the 88.57% of the teachers who said they had access to the Omail software, 93.55% of the respondents said they used it at least once a week. In a related question, it was found that actually 100% of the teachers used Omail at least once per week. Some teachers were just not aware that they used the Omail software as their e-mail system.

Three word processing programs were available to the teachers. Of the teachers that had access to various word processing programs, the usage dropped to only 50 percent of the teachers using them at least once a week. As to the use of a grading program, sixty percent of the teachers had a grading program at their disposal and yet only 57 percent of those teachers utilized this program on a regular basis. Many teachers had software available to them but did not seem to utilize it as much as they could.

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A vast majority of teachers said they were comfortable using a computer. Sixty three percent of the respondents stated that they had moderate computer experience and 20 percent of them expressed that they had a lot of computer experience. The teachers who stated that they had a lot of computer experience utilized software more often and to a higher degree than did others who rated themselves with moderate computer usage or little computer usage. These high-end users also tended to use a larger variety of programs than did other users.

Respondents overwhelmingly (91 percent) wanted to see more technology inservices within the district. Eighty six percent felt that small group or one-on-one instruction would be the most beneficial way of having future inservices. One teacher stated, "I find I am particularly slow in the large group training sessions. Most others are way ahead of me and if I make a mistake the leader sometimes will not get around to help me for 20 minutes, and I am lost." Several teachers felt the smaller group setting would be more advantageous for teachers to build up their self-confidence especially when coupled with follow-up training within 3 to 5 weeks after the initial training.

Overall, the results indicated that the teachers, who felt they were moderate computer users, did not have the confidence that this could instill in them. Teachers did not use the available software in great numbers with the exception of the high-end users. The findings validated Chiero's study (1997), which found that a small group of high-end users utilized most of the programs available to them and were considered to be "exemplary computer users", while lower-end users got by with the basics. Marcinkiewicz (1994 &1995) found that districts often invested in computer training inservices, but often that training, which was done in large group settings, seemed to benefit the high-end users the most. Since high-end users made up the smallest group of computer users within the district, the money for these training inservices did not seem to be utilized the best way possible. Teachers of this study also stated they would like to see more inservices, but at a smaller scale. It is recommended that school districts provide small group inservices training. In this inservices training, teachers may get one-on-one help without feeling intimidated by high-end users who are often moving at a more rapid pace. Since the preferred method of learning new technologies, according to Mowrer-Popiel, Pollard, and Pollard (1994), was via tutor, it would make most sense to provide this type of one-on-one instruction. Teachers would get what they wanted, and districts would probably get more long term technology users for the money they spent on inservices.

Computer Literacy of Students

The study was intended to examine whether there was a discrepancy between what students perceived to know and what they actually could do with the computers. The study was conducted in a 5th grade class at an elementary school. In January of 1999, the 5th grade class was given 5 computers. These computers were going to be wired to the Internet later this year. The school district was studying whether students would do better on writing prompts that the district used if they used computers. The school district had made the assumption that the 5th grade students could use computers and could understand how computers worked. The researchers attempted to examine the assumptions—students' computer literacy levels.

Subjects of the study were a convenient sample of ten boys and ten girls in a 5th grade class at the school. Students were mostly Limited English Proficient students (LEP). The school has been designated an underachieving school by the school district. The school scored in the 19% in the Stanford-9 and had been ranked as the lowest school out of 23 elementary schools. The social economic status of the student population was low; Eighty seven percent of all of the students received free lunch based on the criteria set up by the state.

The survey consisted of 15 simple yes or no questions to gauge the students' computer skills. The questions ranged in level of difficulty from basic to more complex, like whether they knew how to turn on a computer, print a document, or change font in Microsoft Word. The students completed the survey in class. They were not given a time limit for completing the survey. One of the students was given assistance in translating some of the questions from English to Spanish.

A few days later, the students' practical performance was tested based on the same survey. The students were called over to the computers two at a time. They demonstrated the skills addressed in the survey and were graded. The researchers tabulated and compared the scores of the students' perceptions and the scores of their demonstrations.

The results indicated that although the students had often been exposed to the computers and had five computers in the class, the students did not have the skills needed to comfortably use the computers. The students tested higher than perceived with questions such as "Do you know what a monitor is?" "Do you know how to eject a CD from the computer?" and "Do you know how to use HyperStudio?" They tested lower than perceived with questions such as "Do you know how to turn on a computer?" or "Do you know how to save your file to a disk?" Many students had also problems navigating through Microsoft Word.

The results also showed that the boys had higher confidence on using computers than girls. All of the boys perceived that they could draw a picture using the paint tool from HyperStudio. When tested, 100% of the boys succeeded drawing the picture. The girls on the other hand were more conservative on their perceptions. Forty percent of the girls perceived that they could eject a CD from the computer. However, when tested, 100% of the girls were able to complete the task. Both groups tested lower than they perceived on the use of the spell check while typing something. Seventy percent of the girls perceived that they could use the spell check. Only 40% of the girls knew how to use it. The boys on the other hand perceived that 100% of them knew how to use the spell check. When tested, 60% of the boys could use it. It was noted that the girls tested higher than the boys on only one item out of 15. On the question about changing the font using Microsoft Word or Works, the girls tested 80% while the boys tested 70%.

The results showed that the students needed to enhance their skills of how to operate computers. Before meaningful instruction via computer can be achieved for these students, the students will have to feel comfortable with the basics covered in the survey. Teachers will have to be aware of the difficulties which the students have in using computers, and will have to be aware that the students will not be able to judge their own abilities quite correctly. Extra time for teaching these basics was necessary.

Conclusion

The results of the studies revealed that computer literary levels of teachers and students need to be enhanced and that technology training must be provided. In addition to large scale training sessions, teachers, especially teachers who do not have advanced computer skills, prefer small group training or one-on-one instruction. As to students, there might be a discrepancy between what they think they know about computers and what they really know. When evaluating students' computer knowledge, it is helpful to have students demonstrate their skills using computers. In the Information Age, computer skills are becoming necessary skills for every citizen. Training teachers to be computer literate to enhance education quality and helping students to be computer literate to face their future challenges are one of the important missions of our nation. We can only imagine the positive impact of the training on our society.

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